FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST-5322

McCain Foods USA

SUMMARY

McCain Foods owns and operates a year around potato processing facility in Othello (Adams Co.) which is located within the federal Columbia Basin Irrigation Project. The facility produces approximately 500 million pounds of French Fries and formed potato products annually. Process wastewater is pretreated to remove solids and is pumped approximately eleven miles to a storage pond/sprayfield system. Final treatment is via center pivot spray irrigation onto approximately 9200 acres that is owned and managed by the Warden Hutterian Brethren. The average monthly wastewater flow from the processing facility is approximately two million gallons per day.

The proposed permit continues the previous permit's sampling and analysis schedule for the wastewater and the irrigated wastewater. Some additional sampling of the supplemental irrigation water sources has been added to account for the water, nutrient, and salt loading from the fresh irrigation water. Soil sampling will continue with samples being taken at the end of the crop growing season.

Crop monitoring has been added to the proposed permit. Site specific nutrient uptake values instead of published values will allow for a better estimate of the nitrogen and salt balances for the sprayfields.

The proposed permit will require the submittal of a leak detection plan for the single-lined winter storage impoundment. This is needed to insure the structural integrity of the liner and the protection of the ground water since the pond's installation in 1996.

The flow metering system for each of the sprayfields has not continuously functioned properly since it was installed in 2000. The proposed permit will require the Permittee to submit a plan and timetable for the repair of the system so that it produces useful data. Accurate flow data is important for this site to insure an accurate account of the water applied to the fields since there is no ground water monitoring network to asses the field's operation relative to the protection of the ground water.

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. **ST-5322** . The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the state include procedures for issuing permits (Chapter 173-216 WAC), and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	McCain Foods USA, Inc.
Facility Name and Address	McCain Foods USA, Inc. 100 Lee St. Othello, WA 99344
Type of Facility	Potato processing
Type of Treatment:	Screening; clarification; land application via center pivot irrigation
Facility Location	Latitude: 46° 50' 26" N Longitude: 119° 10' 33" W.
Legal Description of Application Area	Sec. 5, 6, T.15N, R.31E; Sec. 6,7,8,15,17,18,19,20,21,22,29,30,32, T. 16N, R. 31E; Sec. 12,14,23,24,25,26,27,34, T. 16N, R. 30E Approximately 9200 acres.
Contact at Facility	Name: Mr. John Lallas, Envir. Eng. Superv. Telephone #: 509.331.7734
Responsible Official	Name: Mr. Don Paradis Title: Facility Manager Address: 100 Lee St., Othello Telephone #: 509.488.9611 (FAX: 488.3982)

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

McCain Foods owns and operates a year around potato processing facility in Othello (Adams Co.) which is located within the federal Columbia Basin Irrigation Project. Irrigation water provided by the project supports production agriculture of a wide variety of crops. The area is semi-arid with an annual precipitation of less than ten inches.

The processing facility has been in operation for over 25 years and was originally named Chef Redy. Approx 800 million pounds per year of freshly harvested or stored potatoes are processed into approximately 500 million pounds of French fries and formed by-products.

INDUSTRIAL PROCESSES

Potatoes are washed/flumed into the processing facility from the raw receiving area where the general process is: sorting, steam peeling, cutting, inspecting, grading, blanching, drying, freezing, packaging, and frozen storage.

There are two main wastewater streams; process wastewater and silt water.

Silt water: The wash/flume water is continuously recycled and reused. To maintain quality, a side stream is diverted to one of two settling basins. Solids removed from the basins are collected and hauled off-site for land application. The water is either reused or sent to the process wastewater system downstream of the clarifier.

Process wastewater: Wastewater from the process facility is the predominate waste stream. It is collected in a floor open-channel gravity flow system which discharges to a pre-treatment facility.

Information presented in the permit application shows a maximum daily discharge of 5 MGD and a maximum monthly average of 4.75 MGD. Fresh water is supplied to the facility from the city of Othello and an onsite well.

Stormwater is collected from the 24 acre facility site and is directed to the process wastewater system.

TREATMENT PROCESSES

The treatment process consists pre-treatment and land application.

Pretreatment: Wastewater from the processing facility is screened and then sent to a clarifier. The water from the clarifier is discharged to an equalization basin (625,000 gallons), then to a wet well where pumps send the water to the storage lagoon/sprayfield site located approx 11 miles east of the facility; Fig. 1.

The solids that are removed from the clarifier are dewatered using a centrifuge. They are hauled off site for cattle feed or land application.

Sprayfied site: The 18" transmission pipeline discharges to a two celled lined storage pond; 418 million gallons (Fig. 2). The first cell allows for settling of solids and some anaerobic treatment. The water discharges to the larger second cell for storage. The entire pond provides approximately 140 days of storage at a flow of 3 MGD.

Wastewater is pumped from the second cell, through a screen and to an irrigation pumping station that sends the water to the land treatment fields. The wastewater is distributed to each pivot in color coded pipes. A system of a valve, an in-line restrictor flow orifice plate, and flow meter with a controller monitors and regulates the flow to the sprayfield.

The predominately center pivot irrigated site is owned and operated by the Warden Huttarian Brethren. The fields are primarily cropped in: mint, wheat, beans, peas, corn, and potatoes.

DISTRIBUTION SYSTEM (SPRAYFIELD)

Process wastewater is pumped to mixing manifolds located throughout the site where the wastewater is injected into the fresh irrigation water distribution system. In-line flow restrictor plates allow only a 25:75 wastewater to fresh mix ratio. This mix ratio results in a higher dilution of the process wastewater than the permit requires for odor control; 60:40. Flows for the process wastewater and fresh water are monitored and a telemetry system transmits the information to McCain and the Huttarians.

Freshwater is provided by deep wells and the East Low Canal which is part of the federal irrigation project.

Information provided in the permit application shows the site to be comprised of 9271 acres. Not all of the fields have water rights; 3445 acres. Depending on the crop rotation the Huttarians request from Ecology's Water Resources Program seasonal changes to the existing rights to temporarily transfer water to these fields.

McCain Foods submitted a SEPA checklist and amended engineering report in January 2005 to add 640 acres to the sprayfield site; Fig. 2. Ecology was lead agency on the SEPA and issued a DNS in March 2005. These new sprayfields are included in the 9271 acres given in the permit application and will be added to the permit. The new sprayfield acreage has water rights for its supplemental water.

Irrigation Management

Information provided in the latest O&M manual shows that a process water application plan is developed each year. It guides the application of wastewater on each field based on the pre-season soil nitrogen level, crop need, and the target end-of-season residual soil nitrogen level. Each day the farm operator allocates water to each field based on the plan.

Hydraulic and nutrient loading

Water and nutrient loading data presented in the annual irrigation and crop management plans for the past five years (2000-2005) were reviewed.

Year	Total wastewater volume (MG)	Crop Requirement (MG)
2000	698	3709
2001	694	5031
2002	575	5031
2003	508	6123
2004	609	4962
2005	626	6457

It is clear that the volume of process wastewater produced each year was much less than the total water requirement of the crops. A substantial amount of supplemental irrigation water was needed to meet the crop demand.

Flow restrictor plates were installed in 2001 on the process water side at the blending stations that allows only 25% process wastewater to be applied. The permit requires a 60:40 mix of wastewater to supplemental water for odor control.

In 2000, the Hutterians began to install a flow metering system to measure the wastewater and supplemental flows to all of the center pivots. Information presented in the annual irrigation and crop plans shows that the system has not functioned properly. The most current plan shows that faulty programming has continued to hamper the usefulness of the metered data; Soiltest, 2006. Hydraulic load values were estimated based on some flow meters and pumping records.

Year	Avg. wastewater net N load (lbs/acre)	Crop uptake (lbs/acre)	Avg. wastewater fixed dissolved solids load (lbs/acre)	Crop uptake (lbs/acre)
2000	10 – 106	110 – 370	177 – 2025	145 - 924
2001	9 – 108	110 – 370	151 – 1849	145 - 924
2002	1 – 104	112 – 299	13 – 1203	114 - 897
2003	10 – 72	102 – 299	137 – 1012	115 - 748
2004	3 – 59	96 – 308	52 – 941	103 - 770
2005	1 – 82	85 – 312	6 – 1179	107 - 779

The net nitrogen load values include assumed nitrogen losses from volatilization, availability of nitrogen via mineralization, and plant uptake efficiency. The crop uptake of nitrogen has

generally exceeded the amount that has been applied. The small nitrogen load values were to potato fields where wastewater was applied only to increase the soil moisture prior to planting. Wastewater was not applied to potato fields after planting. Depending on the soil residual nitrogen concentration, fertilizer nitrogen was also applied to meet the crop demand.

McCain began to use double cropping in 2001 to increase soil nitrogen uptake. Triticale was planted in several fields after harvest, or wheat fields were disced and watered to promote volunteer growth. Both crops increased the uptake of soil nitrogen during their growth in the Fall and spring.

The uptake of applied fixed dissolved solids has generally been less than the amount applied from the wastewater. This is not uncommon for vegetable/potato land treatment systems. The lower crop uptake has resulted in an increase of the surface soil exchangeable sodium percentage (ESP) at the site from approximately 7% in 1992 to approximately 10% in 2003. Values since 2003 have been unchanged or slightly less than 10%. ESP values >15% are considered sodic and require some kind of mitigation action. Information presented in the latest irrigation and crop management plan shows that the Hutterian Brethren apply gypsum to potato fields to maintain soil structure and infiltration; Soiltest, 2006.

Leaching the soils by applying excess irrigation water is an agronomic practice used to control soil salinity. The latest irrigation and crop plan estimated that the leaching requirement for site is between 10% and 15%. The plan stated that very little leaching is occurring at the site.

GROUND WATER

A hydrogeologic investigation was done for the sprayfield site and a report was submitted; Kennedy/Jenks, 1999). Site soils are comprised of silt and sandy loam, and are generally deep (>5ft) overlying basalt. A discontinuous layer of caliche extends throughout the site at depths of 6-12 feet. All irrigation wells in and near the sprayfield site are completed in the lower basalt aquifer.

The report reviewed well logs, and test pits and soil boring data from the site and concluded that monitoring wells are not suitable for assessing the impact of the sprayfields on the ground water. The depth to ground water exceeds 100ft and is due to confining pressure. There is evidence that shallow perched ground water above the caliche does occur during the irrigation season, but it is not permanent.

The report recommended that soil sampling be used to manage the sprayfields with regards to protecting the ground water beneath the site, instead of monitoring wells.

PERMIT STATUS

The previous permit for this facility was reauthorized on February 14, 2001.

An application for permit renewal was submitted to the Department on August 31, 2005 and accepted by the Department on November 1, 2005.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on June 8, 2006. Based on a review of permit information for the period January 2004 – April 2006 it was determined that the McCain facility was in compliance with the limitations and conditions in the discharge permit.

During the history of the previous permit, the Permittee has remained in compliance based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports. The proposed wastewater discharge prior to land application is characterized for the following parameters as presented in the renewal application. Samples were collected from the storage pond.

Table 1: Wastewater Characterization

Parameter	Concentration
BOD (mg/L)	Range: 183 – 554; Avg. = 332
COD (mg/L)	Range: 898 – 1069; Avg = 950
TSS (mg/L)	Range: 163 – 299; Avg = 245
TDS (mg/L)	Range: 1099 – 1277; Avg = 1169
Conductivity (umhos/cm)	Range: 1987 – 2400; Avg = 2187
pH (s.u.)	Range: 6.95 – 7.0
TKN (mg/L)	Range: 77 – 118; Avg = 86
Ortho-phosphate (as P)	Range: 25.4 – 37.3; Avg = 31.1
Calcium (mg/L)	Range: 4.2 – 11; Avg = 7.6
Chloride (mg/L)	Range: 123 – 136; Avg = 130
Magnesium (mg/L)	Range: 10.3 – 13.9; Avg = 12.1
Potassium (mg/L)	Range: 205 – 288; Avg = 246
Sodium (mg/L)	Range: 161 – 197; Avg = 179
Sulfate (mg/L)	Range: 2.6 – 4.5; Avg = 3.1

The values reported in the application are similar to those that were reported to Ecology in monthly discharge monitoring reports for the period March 2001 – June 2006; Addendum. The only difference was for calcium. The average value reported in the application was 7.6 mg/L while the average for the DMR values was 81.4 mg/L. This high value was most likely due to an erroneous value reported for August 2005; 805 mg/L.

The chemical composition of the wastewater is comparable to other potato process wastewater. The only notable exception is the lower BOD values for the McCain wastewater. The organic strength for many other potato process wastewater ranges from 800-2000 mg/L.

The current permit requires the testing of the wastewater for total dissolved, fixed dissolved, and volatile solids. The average values for these are: 1348, 1026, and 293 mg/L, respectively (Addendum). The higher FDS value shows that mineral salts (Na, Ca, Mg, K) make up most of the total dissolved content of the wastewater, not organic salts. The largest mineral contributors to the salinity are potassium, sodium, and bicarbonate.

Wastewater flow values from the process facility to the lagoon/sprayfield site were summarized from monthly DMRs for the period March 01 – June 05; Addendum. The average monthly flow ranged 1.31 to 2.4 MGD. The maximum monthly flow never exceeded the design flow capacity for the pretreatment facility; 5 mgd.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard were determined in the engineering reports (JUB, 1995; 1999; 2001; 2005), in conformance with *Guidelines for the Preparation of Engineering Reports for Industrial Wastewater Land Application Systems*, May 1993.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

1. Wastewater shall be land applied via spray irrigation not to exceed agronomic rates (as defined in the Department's ground water implementation guidance) for total nitrogen and water, and at rates for other wastewater constituents that are protective of background ground water quality.

2. Total nitrogen and water shall be applied to the sprayfields as determined by a current irrigation and crop plan.

3. The system must be operated so as to protect the existing and future beneficial uses of the ground water and not cause a violation of the ground water standards.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. The goal of the ground

water quality standards is to maintain the highest quality of the State's ground waters and to protect existing and future beneficial uses of the ground water through the reduction or elimination of the discharge of contaminants to ground water [WAC 173-200-010(4)]. This goal is achieved by [GW Implementation Guidance, Abstract, page x]:

1. Requiring that AKART (all known available and reasonable methods of prevention, control and treatment) be applied to any discharge;
2. Application of the antidegradation policy of the ground water quality standards. This policy mandates protecting background water quality and preventing degradation of water quality which would harm a beneficial use or violate the ground water standards; and
3. Establishing numeric and narrative criteria for the protection of human health and welfare in the ground water quality standards.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 2: Ground Water Quality Criteria

Total Dissolved Solids	500 mg/L
Nitrate	10 mg/L

Information presented in the hydrogeologic report for the sprayfield site shows that the presence of an upper unconfined aquifer beneath the site is unlikely. There is evidence that shows the presence of perched ground water above the discontinuous caliche layer during the irrigation season but that it disappears after irrigation. This finding is similar to what was found by the hydrogeologic investigation of another nearby sprayfield site that is used by another potato processor; J.R. Simplot. The hydrogeologic report for the McCain fields determined that ground water wells are not appropriate for the site, and that soil monitoring would provide the needed information to control nitrate leaching below the root zone.

Ecology is not aware of any ground water information that would dispute the findings and recommendations of the hydrogeologic study. The expanse of the sprayfield site, the information presented in the annual irrigation and crop management plans relative to water and nitrogen loading, and the hydrogeologic information appears to show that the potential to impact ground water is not high. Therefore, the proposed permit will not require the installation of monitoring wells. Instead, soil monitoring will continue as the primary method to assess the operations of the sprayfields and their potential impacts on the ground water beneath the site.

COMPARISON OF FACILITY DESIGN CRITERIA WITH THE EXISTING PERMIT ISSUED FEBRUARY 14, 2001.

Table 3: Comparison of Previous and New Limits

Parameter	Existing Limits	Proposed Limits
Max. average monthly flow (MGD)	4.75	4.75
Max. daily flow (MGD)	5.0	5.0

The maximum average daily limit is taken from information given in the permit application. The daily maximum flow is the design flow for the pretreatment facility; JUB, 1999.

AUTHORIZED SPRAYFIELD ACREAGE

The current permit authorizes the application of wastewater onto 8552 acres. A total of 4872 of those acres have water rights that allows for the addition of supplemental water to meet the crop demand. The remainder of the site (3680 acres) can only be used when it can be demonstrated to Ecology that supplemental water can be made available. This is done on an annual basis between the Hutterians and Ecology's Water Resources Program.

Information provided in the permit application shows that the new 640 acre parcel (Fig. 2) has water rights for supplemental water. Therefore, the new acreage will be added to the 4872 acres in the current permit; 5512 acres

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

WASTEWATER MONITORING

The monitoring schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

PRETREATED WASTEWATER

The current permit requires that the flow from the pretreatment facility to the lagoon/sprayfield site be continuously monitored. This condition will be extended into the proposed permit. Flows will be reported for average and total monthly, and daily maximum. The daily maximum and average monthly flows can be compared to the design values for the pretreatment facility; 9.36 MGD (6500 gpm) and 5 MGD, respectively (JUB, 2001).

IRRIGATED WASTEWATER

The current permit requires that samples of the irrigated wastewater be collected at a location prior to mixing with supplemental water. The nutrient data from these analyses are combined with the volume of wastewater used each year to arrive at an average "lbs/acre-ft" or "lbs/1000 gallons" value. These are used to estimate the nutrient loading to the fields. For the 2005 irrigation season, 1000 gallons of wastewater contained 0.62 lbs of available N and 7.7 lbs of mineral salts; Soiltest, 2006.

The method of sampling the irrigated wastewater for the purpose of estimating loading to the sprayfields will continue to the proposed permit. The list of test parameters and frequency of sampling will be modified: ortho-phosphate will be eliminated.

SUPPLEMENTAL WATER MONITORING

A relatively large amount of supplemental fresh water must be mixed and/or applied to the fields to meet the crop water demand. In 2005 approximately 4500 MG of fresh water was applied to the fields either mixed with wastewater or applied directly. It is Ecology's opinion that the nitrogen and salt loading contributed by this hydraulic loading must be accounted for. In addition, dissolved salt information for the supplemental water is needed to better estimate how much of it is needed to meet the leaching requirement to control soil salinity when leaching is necessary.

The proposed permit will require some limited testing of the supplemental wastewater sources for TKN, TDS, and conductivity. Average values for these parameters can be used to estimate loading.

According to information presented in the latest engineering report, supplemental water is taken from 17 wells and the East Low Canal; JUB, 2005. Based on the list of wells it is proposed that representative samples be taken from one of each of the following source-name wells:

McKay	Frank
Lyle	E. Low Canal
Kent	

CROP MONITORING

The current permit does not require crop monitoring. Crop tissue monitoring is generally a permit requirement to provide data from which to calculate crop uptake of nitrogen and salts as part of developing nutrient budgets for the fields. In the absence of site specific crop tissue analysis data, published values or laboratory records of crop tissue data are used to estimate the crop nutrient removal at the site; Soiltest, 2006.

Ecology recognizes the difficulty of sampling and analyzing crops, especially the non-grain/grass types of crops; potatoes, beans, sweet corn, and peas. Permits to land treatment systems generally allow published crop uptake values can be used for non-grain/grass types of crops, but crop tissue analysis is required for grain/grass types of crops; mint, wheat, alfalfa.

It has been decided to add some crop monitoring to the proposed permit to better estimate the site specific crop removal of nutrients. Crop sample collection for testing will be required for all grain/grass-type of crops (alfalfa; wheat; mint, etc.). Samples will be collected in a manner that best represents the uptake for each crop. These values will be used in the determination of the end-of-year nitrogen/nutrient, and water balance reporting requirements. For non-forage type crops (e.g., corn, potatoes), the use of literature values for nitrogen/nutrient uptake that are applicable to the area will be acceptable. Composites will be comprised of at least 10 random samples.

SOIL MONITORING

In the absence of ground water monitoring, soil monitoring is used to assess the operation of the fields and their potential to impact ground water from the leaching of nitrogen and salts below the root zone.

The soil monitoring requirements in the current permit will be extended to the proposed permit.

VADOSE ZONE MONITORING

The hydrogeologic report evaluated vadose zone monitoring as a method to monitor the effectiveness of the sprayfield site to protect the ground water; Kennedy/Jenks, 1999. The report concluded that vadose zone monitoring was unreliable and more expensive than soil monitoring.

Vadose zone monitoring methods have changed and improved since this evaluation. Ecology has and is working with other land treatment dischargers to install vadose zone monitoring systems to evaluate sprayfield performance and the protection of ground water. Leachate data collected from the systems are not used as a regulatory tool, but rather as a means to "ground truth" estimated quality and quantity of leaching losses, and to better manage irrigation practices to better protect the ground water.

Vadose zone monitoring will not be required in the proposed permit. However, if soil data indicate a higher potential to impact the ground water Ecology may require McCain to consider installing a system to monitoring the quality and quantity of water that is leached from the fields.

GROUND WATER MONITORING

In accordance with the findings and recommendations of the hydrogeologic report for the site, ground water monitoring will not be required; Kennedy/Jenks, 1999. The continuation of not requiring ground water or other types of ground water protection monitoring will depend, in part, on the soil monitoring data.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

FACILITY LOADING

The design criteria for this treatment facility are taken from the 2001engineering report update prepared by JUB Engineers and are as follows:

Monthly average flow (max. month):	4.75 MGD
Daily max. flow	5 MGD

The total design volume of the irrigation storage pond (418 MG) shall not be exceeded.

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). For significant changes in loadings to the treatment works, the permit requires a new application and an engineering report (WAC 173-216-110[5]).

IRRIGATION AND CROP MANAGEMENT PLANS

The irrigation and crop management plan is required to support the engineering reports and operations and maintenance manual. This plan shall include a consideration of wastewater application at agronomic rates and should describe and evaluate various irrigation controls.

The permit will require the plan report to include the following information:

1. Calculated balances for nitrogen and salts for each field for the reporting year. Contributions from the process wastewater, supplemental water and fertilizer shall be accounted for.
2. The total nitrogen and salt loads shall be compared to the estimated values that were presented in the previous year's Irrigation and Crop Management Plan.
3. Calculated water balances for each field, and an estimate of the leaching fraction from each field.
4. The hydraulic load to each field shall be compared to the estimated values that were presented in the previous year's Irrigation and Crop Management Plan.
5. The results of the soil and crop testing will be presented.
6. Estimates will be made for the water, nitrogen, and salt load for the upcoming year.

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S.5. as authorized under Chapter 173-240-150 WAC and Chapter 173-216-110 WAC. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

An update to the O&M Manual has been submitted; JUB, 2005.

BEST MANAGEMENT PRACTICES

Some general BMPs for the sprayfields have been developed since the last permit was issued to McCain based on other land treatment systems. All are based on the protection of the ground water. They include:

1. A viable and healthy cover crop shall be maintained on all fields that receive wastewater.
2. Use supplemental water or precipitation to meet the leaching requirement to control soil salinity.
3. Adjust irrigation plans during high precipitation events to minimize percolate losses.

SOLID WASTE PLAN

An updated solid waste plan was submitted with the permit application. Wastes composed of dirt, mud, vines, bad potatoes are hauled off-site and land applied. Solids collected from the process waste stream are either hauled off for cattle feed or land applied. An estimated 9800 tons of dirt, mud, vines, etc. are produced each year.

The land application of the solid wastes is done per the requirements contained in the Adams Co. Health Dept. issued permit.

The permit will require all updates to be submitted to Ecology.

SPILL PLAN

An update to the spill plan was submitted with the permit application. The update contains a list of materials that are stored on-site that could enter into the wastewater system. The largest volumes are for vegetable/animal cooking oil (96,000 gallons) and sodium hydroxide (7000 gallons). Other materials include petroleum oil, hydrochloric acid, and sodium hypochlorite.

Containment of the rail car area that holds the cooking oil was installed in 1999. Any spill would be contained within the site and be channeled or piped to the process wastewater system. There is sufficient volume in the clarifier (500,000 gallons) and the flow equalization basin (600,000 gallons) at the pretreatment facility to contain most any spill.

The permit will require all updates to the plan to be submitted to Ecology.

LEAK DETECTION PLAN – STORAGE POND

Ecology's ground water quality standards implementation guidance (Ecology, 1996) states that impoundments which have double liners with leak detection are not considered to have a potential to impact ground water. A monitoring plan for this type of construction is therefore not needed to insure leakage is not impacting ground water. Any other type of lined impoundment could require the development of a monitoring plan to detect liner leakage and potential impacts to the ground water.

If a single synthetic liner is used the potential to contaminate ground water can be assessed by evaluating the volume of water discharged to the aquifer and the mass loading of contaminants infiltrating to ground water. The volume of wastewater discharge is calculated by using the following equation: $Q = KA(D_P/L_T) – ET$

Q = discharge (ft^3/day)
K = liner permeability (ft/day)
A = surface area of the impoundment (ft^2)
D_P = average depth of wastewater in the impoundment (ft)
L_T = liner thickness (ft)
ET = evapotranspiration (ft^3/day)

The mass loading (lbs/day) is then calculated by using the following equation: Mass Loading = Q x C x 8.34

Q = discharge (MGD)
C = concentration of contaminants in wastewater (mg/L)

The impact to ground water quality can be evaluated by appraising the assimilative capacity of the aquifer based on the hydrogeologic conditions and the mass loading to the aquifer.

A review of the plans and spec's for the wastewater storage pond and information contained in the O&M manual show that the pond is single lined with 60-mil HDPE. The lagoon was placed on-line in October 1996. In addition to the liner, a chimney drain system was installed within the northern dike, at the inside top of the dike to intercept any leakage flow along the dike. Any water collected by the chimney drains is conveyed to a concrete sump located at the NW corner of the lagoon. The sump is equipped with a float alarm that signals the presence of water.

Verbal information received from McCain revealed that the storage pond is visually inspected each year. An active rodent control program is also used to prevent borrowing animals that could jeopardize the lagoon's earthen walls.

Ecology's Dam Safety Program also inspects the facility, with the last inspection done in May 2003. The inspection report noted two tears in the liner that needed repair.

To insure the continued integrity of the liner and the protection of the ground water beneath the site, the proposed permit will require the submittal of a leak detection plan for the wastewater storage pond. Given the size of the pond (90 acres) a visual inspection without some other supporting information would not be acceptable. The chimney drain system could be made part of the plan but since it was only installed in one of the dikes, some other additional leak detection methods are needed. These include wells or piezometers along the outer periphery of the structure, or by using electronic detectors.

Ecology has not drafted guidance for a leak detection program, although the liner installation section in Ecology's guidance for municipal sewage works is currently be revised and may include a description of leak detection. Ecology is working with other dischargers to draft a leak detection program for their specific facility and offers their input in developing a plan for the McCain facility.

SPRAYFIELD FLOW MONITORING SYSTEM

A plan to install flow meters at each of the pivots started in 2000. Since then hardware and software problems have plagued the system. Information contained in the 2005/06 Irrigation and Crop Plan indicates that most pivots had meters in place, but problems with the software continue to hamper the usefulness of the flow data.

Accurate flow data is important for this site to control the water and nutrient loading, especially in the absence of a ground water monitoring or other system that measures the effectiveness of the operation of the fields relative to the protection of the ground water.

The proposed permit will require the Permittee to submit a plan that describes what steps will be taken to repair the flow monitoring system for the sprayfields. The plan shall include a timeline for the repairs.

BACKFLOW PREVENTION

Information contained in the 2005 engineering report shows that a majority of the irrigation wells are equipped with reduced pressure backflow prevention devices. Two of the wells (16W and 17W) are connected to the irrigation system at two points. One of the connections does not have backflow prevention. The report recommended that a backflow device be installed on the east pipe branch at well 17W.

The permit will require the installation of a reduced pressure backflow preventer at this location.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

JUB Engineers, Inc. 2005. Operation & Maintenance Manual, Potato Process Water, Pretreatment, Pumping, Storage, Transmission and Land Application Facility. August.

JUB Engineers, Inc. 2005. WAC 173-240, Engineering Report, Potato Process Water Pretreatment and Land Application System, Updated. August.

JUB Engineers, Inc. 2001. WAC 173-240, Engineering Report, Potato Process Water Pretreatment and Land Application System, Updated. January.

JUB Engineers, Inc.,1999. WAC 173-240, Engineering Report, Potato Process Water Pretreatment and Land Application System. July.

JUB Engineers, Inc., 1995. Preliminary Engineering Report, McCain Foods, Inc., Pump Stations, Transmission Pipelines, and Storage Facility Project. December.

Kennedy/Jenks Consultants. 1999. Hydrogeologic Study Report, McCain Foods, Inc. Wastewater Land Treatment System, Othello, WA. September.

Soiltest Farm Consultants. 2006. McCain Foods, Othello, Land Application Report –2005, & Crop Management Plan-2006. March.

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Soiltest Farm Consultants. 2003. McCain Foods, Othello, Land Application Report –2002, & Crop Management Plan-2003. February.

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Soiltest Farm Consultants. 2001. McCain Foods, Othello, Land Application Report –2000, & Crop Management Plan-2001. March.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on November 10 and 17, 2005 in the Othello Outlook to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department published a Public Notice of Draft (PNOD) on September 14, 2006 in the Othello Outlook to inform the public that a draft permit and fact sheet are available for review. Interested persons were invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents were available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
4601 North Monroe Street
Spokane, WA 99205-1295

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509.329.3524, or by writing to the address listed above.

The Fact Sheet and permit were written by Don Nichols.

APPENDIX B--GLOSSARY

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C--RESPONSE TO COMMENTS